

## WHAT IS CLAIMED IS:

- 1        1.        A method for detecting a heat generating failure in a semiconductor device having  
2        an unpassivated surface comprising the steps of:  
3                applying a coating to said unpassivated surface of said semiconductor device,  
4        wherein said coating is non-electrically conducting and capable of localizing heat  
5        generated by said failure in a particular area;  
6                biasing said semiconductor device; and  
7                detecting said failure by detecting a location of said heat generated by said failure  
8        in said coating.
- 1        2.        The method as recited in claim 1, wherein said coating comprises a high flash  
2        point and a low vapor pressure.
- 1        3.        The method as recited in claim 1, wherein said coating comprises a liquid.
- 1        4.        The method as recited in claim 1, wherein said coating comprises silicon dioxide.
- 1        5.        The method as recited in claim 4, wherein said coating has a thickness of  
2        approximately two microns.

- 1       6.     A semiconductor device comprising:  
2             an unpassivated surface;  
3             a failure, wherein said failure being a heat generating failure; and  
4             a coating on said unpassivated surface, wherein said coating is non-electrically  
5     conducting and capable of localizing heat generated by said failure in a particular area of  
6     said coating, wherein said failure is detected by detecting a location of said heat  
7     generated by said failure in said coating.
- 1       7.     The semiconductor device as recited in claim 6, wherein said coating comprises a  
2     high flash point and a low vapor pressure.
- 1       8.     The semiconductor device as recited in claim 6, wherein said coating comprises a  
2     layer of liquid.
- 1       9.     The semiconductor device as recited in claim 6, wherein said coating comprises  
2     silicon dioxide.
- 1       10.    The semiconductor device as recited in claim 9, wherein said coating has a  
2     thickness of approximately two microns.